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A real-time pan-European flash flood hazard assessment and early warnings based on OPERA composites: Case studies

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Flash floods induced by heavy rain are natural hazards that significantly affect human lives. Anticipating flash floods in real-time for effective response requires accurate rainfall observations with rapid update in time. And proper understanding regarding runoff generation (e.g., hydrological and hydraulic processes within a catchment) is also necessary.

For the last few years, the flash flood early warning module of the European Rainfall–Induced Hazard Assessment (ERICHA) system has been running over the European river network in the framework of the European projects ERICHA (www.ericha.eu), ANYWHERE (www.anywhere-h2020.eu) and SMUFF (www.smuff.eu). The ERICHA system uses the OPERA radar composites (with resolutions of 2 km, 15 min) as rainfall inputs, and forecasts the flash flood hazard with a resolution 1 km and lead-times up to 6 hours using a traffic-light code (with 4 levels).

We present the performance of both the flash flood hazard assessment and nowcasting through several cases selected during 2018. The chosen cases illustrate the advantages of using a pan-European system and the limitations of the algorithm.